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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,217	03/30/2004	Donald R. Snow JR.	6000500-1010	3851

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EXAMINER	
HOPKINS, ROBERT A	

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/813,217	SNOW, DONALD R.	
	Examiner	Art Unit	
	Robert A. Hopkins	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) *22-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-30-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1-21 and 46 in the reply filed on 5-25-06 is acknowledged.

Claims 22-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5-25-06.

Claim Rejections - 35 USC § 112

Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 18 recite "being adapted to deliver nitrogen-enriched gas from the nitrogen-enriched gas flow to the fuel tank without delivering the nitrogen-enriched gas flow through the fuel tank vent, said gas separation module being adapted to deliver nitrogen-enriched gas from the nitrogen-enriched gas flow to the fuel tank vent". The claim states that the nitrogen-enriched gas flow is not delivered to the fuel tank vent, and then states that the nitrogen-enriched gas flow is delivered to the fuel tank vent. Therefore the scope of the claim is confusing because the claim language seems contradictory. Claims 2-17 depend on claim 1 and hence are also rejected. Claims 19-21 depend on claim 18 and hence are also rejected.

Claim 17 lines 3-4 recites "the aircraft". There is a lack of antecedent basis for "the aircraft" in previous claim limitations. Correction is requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6,12,13,15,16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jones(6729359).

Jones teaches an inert gas generating system for generating inert gas on a vehicle having a fuel tank(not shown) and a fuel tank vent(not shown) , the system comprising an inlet for receiving a flow of gas having an nitrogen component and an oxygen component from a gas source(12), a heat exchanger(14) downstream from the inlet and in fluid communication with the inlet for cooling gas received from the inlet, and a gas separation module(18) downstream from the heat exchanger and in fluid communication with the heat exchanger for separating gas received from the heat exchanger into a nitrogen enriched gas flow and an oxygen enriched gas flow, the gas separation module being adapted to deliver nitrogen enriched gas from the nitrogen enriched gas flow to the fuel tank without delivering the nitrogen enriched gas through the fuel tank vent. Jones further teaches a flow valve(30) operatively connected downstream from the gas separation module to control a flow rate of nitrogen enriched gas flow received from the gas separation module. Jones further teaches a fuel tank valve operatively connected between the gas separation module and the fuel tank to

control a flow rate of nitrogen enriched gas into the fuel tank. Jones further teaches a fuel tank vent valve operatively connected between the gas separation module and fuel tank vent to control a flow rate of nitrogen enriched gas into the fuel tank vent. Jones further teaches a flow sensor(34) operatively connected downstream from the gas separation module to measure a flow rate. Jones further teaches an oxygen sensor(32) operatively connected downstream from the gas separation module to measure an oxygen content of the nitrogen enriched gas flow downstream from the gas separation module. Jones further teaches a temperature sensor(24) operatively connected downstream from the heat exchanger to measure a temperature of gas downstream from the heat exchanger; and a heat exchanger bypass valve(43 in figure 2a) operatively connected between the inlet and the gas separation module to allow gas to bypass the heat exchanger, said heat exchanger bypass valve operatively connected to the temperature sensor for controlling the temperature of the gas received by the gas separation module based on the temperature of the gas downstream from the heat exchanger(column 5 lines 9-27). Jones further teaches a filter(26) operatively connected between the heat exchanger and the gas separation module to filter entrained moisture and particulate contaminants from gas flowing between the heat exchanger and gas separation module. Jones further teaches wherein the gas separation module comprises a permeable membrane gas separation module(column 3 lines 13-15).

Claims 18 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jones(6729359).

Jones teaches an aircraft comprising an airframe(not shown), a fuel tank(not shown) mounted on the airframe; a fuel tank vent(not shown) operatively connected to the fuel tank; and an inert gas generating system for generating inert gas on-board the aircraft, the inert gas generating system comprising an inlet for receiving a flow of gas having an nitrogen component and an oxygen component from a gas source(12), a heat exchanger(14) downstream from the inlet and in fluid communication with the inlet for cooling gas received from the inlet, and a gas separation module(18) downstream from the heat exchanger and in fluid communication with the heat exchanger for separating gas received from the heat exchanger into a nitrogen enriched gas flow and an oxygen enriched gas flow, the gas separation module being adapted to deliver nitrogen enriched gas from the nitrogen enriched gas flow to the fuel tank without delivering the nitrogen enriched gas through the fuel tank vent. Jones further teaches a gas turbine engine for propelling the aircraft and an environmental control system for conditioning bleed air from the engine, wherein the air source includes at least one of the gas turbine engine and the environmental control system.

Claim 46 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jones(6729359).

Jones teaches an inert gas generating system for generating inert gas on a vehicle having a fuel tank, the system comprising an inlet for receiving a flow of gas having a nitrogen component and an oxygen component from a gas source; a heat exchanger downstream from the inlet and in fluid communication with the inlet for cooling gas received from the inlet, and a gas separation module(18) downstream from

the heat exchanger and in fluid communication with the heat exchanger for separating gas received from the heat exchanger into a nitrogen enriched gas flow and an oxygen enriched gas flow, the gas separation module being adapted to generate a flow rate of the nitrogen enriched gas flow of about 40 pounds per minute with an oxygen content less than or equal to about 9.8 percent by volume.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7,8,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones(6729359) taken together with McAuliffe et al(2004/0141836).

Jones teaches all of the limitations of claim 7 but is silent as to a compressor operatively connected between the inlet and the heat exchanger to increase a pressure of the gas received by the heat exchanger. McAuliffe et al teaches an inert gas generating system including an inlet, an air separation module, and a compressor operatively connected downstream from the inlet to increase a pressure of the gas. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a compressor between the inlet and heat exchanger of Jones in order to increase a pressure of the gas received by the heat exchanger.

McAuliffe et al further teaches wherein operation of the compressor is driven by gas received from the inlet. McAuliffe et al further teaches a compressor bypass check valve(42) operatively connected between the inlet and the air separation module to allow gas to bypass the compressor.

Allowable Subject Matter

Claims 9,10,14,17,19,20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 9 recites " a pressure sensor operatively connected downstream from the compressor to measure a pressure of gas downstream from the compressor; and a compressor regulator valve operatively connected to the compressor and the pressure sensor for controlling operation of the compressor based on the pressure of the gas downstream from the compressor". McAuliffe et al teaches a compressor, but does not teach a pressure sensor operatively connected downstream from the compressor to measure a pressure of gas downstream from the compressor; and a compressor regulator valve operatively connected to the compressor and the pressure sensor for controlling operation of the compressor based on the pressure of the gas downstream from the compressor. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a pressure sensor operatively connected downstream from the compressor to measure a pressure of gas downstream from the compressor; and a compressor regulator valve operatively connected to the compressor and the pressure sensor for controlling operation of the compressor based on the

pressure of the gas downstream from the compressor because McAuliffe et al does not suggest such a modification. Claim 10 depends on claim 9 and hence would also be allowable upon incorporation of claim 9 into claim 1.

Claim 14 teaches "further comprising a ground connection port operatively connected between the heat exchanger and the gas separation module for introducing air to the gas separation module from a pre-conditioned air source external to the vehicle". Jones fails to teach a ground connection port. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a ground connection port operatively connected between the heat exchanger and the gas separation module for introducing air to the gas separation module from a pre-conditioned air source external to the vehicle because Jones does not suggest such a modification.

Claims 17 and 20 teaches "a ground connection port operatively connected downstream from the gas separation module for introducing nitrogen-enriched gas from a nitrogen-enriched gas source external to the aircraft to at least one of the fuel tank and the fuel tank vent". Jones fails to teach a ground connection port. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a ground connection port operatively connected downstream from the gas separation module for introducing nitrogen-enriched gas from a nitrogen-enriched gas source external to the aircraft to at least one of the fuel tank and the fuel tank vent because Jones does not suggest such a modification.

Claim 19 teaches "further comprises a ground connection port operatively connected between the heat exchanger and the gas separation module for introducing gas to the gas separation module from a pre-conditioned air source external to the aircraft". Jones fails to teach a ground connection port. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a ground connection port operatively connected between the heat exchanger and the gas separation module for introducing gas to the gas separation module from a pre-conditioned air source external to the aircraft because Jones does not suggest such a modification.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kenyon(3587618) teaches an aircraft fuel tank inerting system wherein nitrogen enriched gas is delivered to the fuel tank without delivering the nitrogen enriched gas through the fuel tank vent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rah
May 31, 2006

ROBERT A. HOPKINS
PRIMARY EXAMINER
AU 1724